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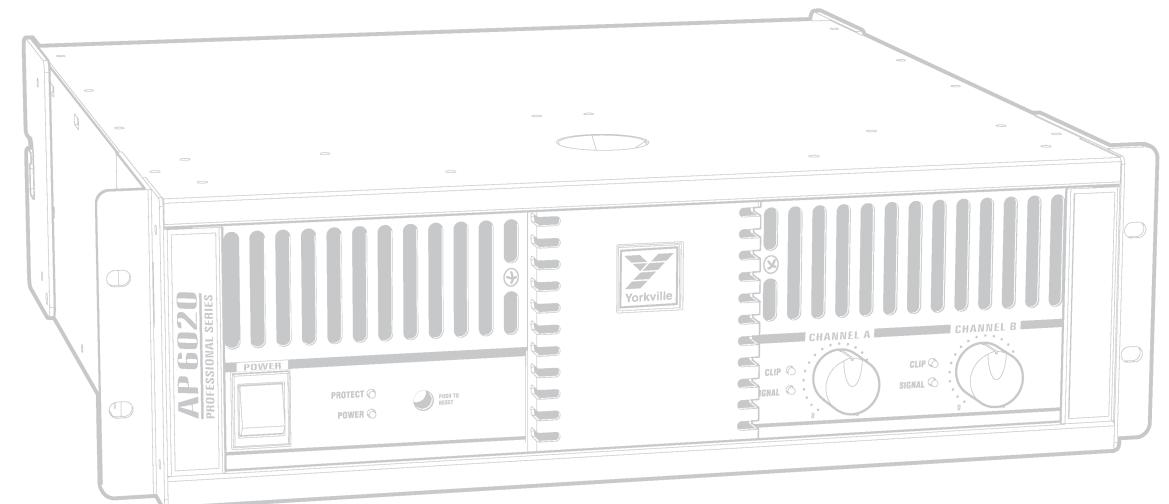
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**AP 6020  
PROFESSIONAL SERIES**



**Quality and Innovation Since 1963**  
Printed in Canada

MODEL TYPE: YS6020

**SERVICE MANUAL**

# IMPORTANT SAFETY INSTRUCTIONS



This lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Ce symbole d'éclair avec tête de flèche dans un triangle équilatéral est prévu pour alerter l'utilisateur de la présence d'un « voltage dangereux » non-isolé à proximité de l'enceinte du produit qui pourrait être d'ampleur suffisante pour présenter un risque de choc électrique.



## CAUTION AVIS

RISK OF ELECTRIC SHOCK  
DO NOT OPEN

RISQUE DE CHOC ELECTRIQUE  
NE PAS OUVRIR



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



S2125A

Le point d'exclamation à l'intérieur d'un triangle équilatéral est prévu pour alerter l'utilisateur de la présence d'instructions importantes dans la littérature accompagnant l'appareil en ce qui concerne l'opération et la maintenance de cet appareil.

### FOLLOW ALL INSTRUCTIONS

Instructions pertaining to a risk of fire, electric shock, or injury to a person

**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK).**

**NO USER SERVICEABLE PARTS INSIDE.**

**REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

**THIS DEVICE IS FOR INDOOR USE ONLY!**

**Read Instructions:** The Owner's Manual should be read and understood before operation of your unit. Please, save these instructions for future reference and heed all warnings.

Clean only with dry cloth.

**Packaging:** Keep the box and packaging materials, in case the unit needs to be returned for service.

**Warning:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. *Do not use this apparatus near water!*

**Warning:** When using electric products, basic precautions should always be followed, including the following:

### Power Sources

Your unit should be connected to a power source only of the voltage specified in the owners manual or as marked on the unit. This unit has a polarized plug. Do not use with an extension cord or receptacle unless the plug can be fully inserted. Precautions should be taken so that the grounding scheme on the unit is not defeated. An apparatus with CLASS I construction shall be connected to a Mains socket outlet with a protective earthing ground. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

### Hazards

Do not place this product on an unstable cart, stand, tripod, bracket or table. The product may fall, causing serious personal injury and serious damage to the product. Use only with cart, stand, tripod, bracket, or table recommended by the manufacturer or sold with the product. Follow the manufacturer's instructions when installing the product and use mounting accessories recommended by the manufacturer. Only use attachments/accessories specified by the manufacturer

Note: Prolonged use of headphones at a high volume may cause health damage on your ears.

The apparatus should not be exposed to dripping or splashing water; no objects filled with liquids should be placed on the apparatus.

Terminals marked with the "lightning bolt" are hazardous live; the external wiring connected to these terminals require installation by an instructed person or the use of ready made leads or cords.

Ensure that proper ventilation is provided around the appliance. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

No naked flame sources, such as lighted candles, should be placed on the apparatus.

### Power Cord

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet. The AC supply cord should be routed so that it is unlikely that it will be damaged. Protect the power cord from being walked on or pinched particularly at plugs. If the AC supply cord is damaged DO NOT OPERATE THE UNIT. To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle. The mains plug of the power supply cord shall remain readily operable.

Unplug this apparatus during lightning storms or when unused for long periods of time.

### Service

The unit should be serviced only by qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

### SUIVEZ TOUTES LES INSTRUCTIONS

Instructions relatives au risque de feu, choc électrique, ou blessures aux personnes

**AVIS: AFIN DE REDUIRE LES RISQUE DE CHOC ELECTRIQUE, N'ENLEVEZ PAS LE COUVERT (OU LE PANNEAU ARRIERE)**

**NE CONTIENT AUCUNE PIECE REPARABLE PAR L'UTILISATEUR.**

**CONSULTEZ UN TECHNICIEN QUALIFIE POUR L'ENTRETIEN**

**CE PRODUIT EST POUR L'USAGE À L'INTÉRIEUR SEULEMENT**

**Veuillez Lire le Manuel:** Il contient des informations qui devraient être comprises avant l'opération de votre appareil. Conservez. Gardez S.V.P. ces instructions pour consultations ultérieures et observez tous les avertissements.

Nettoyez seulement avec le tissu sec.

**Emballage:** Conservez la boite au cas où l'appareil devait être retourné pour réparation.

**Avertissement:** Pour réduire le risque de feu ou la décharge électrique, n'exposez pas cet appareil à la pluie ou à l'humidité. *N'utilisez pas cet appareil près de l'eau!*

**Attention:** Lors de l'utilisation de produits électriques, assurez-vous d'adhérer à des précautions de bases incluant celle qui suivent:

### Alimentation

L'appareil ne doit être branché qu'à une source d'alimentation correspondant au voltage spécifié dans le manuel ou tel qu'indiqué sur l'appareil. Cet appareil est équipé d'une prise d'alimentation polarisée. Ne pas utiliser cet appareil avec un cordon de raccordement à moins qu'il soit possible d'insérer complètement les trois lames. Des précautions doivent être prises afin d'éviter que le système de mise à la terre de l'appareil ne soit désengagé. Un appareil construit selon les normes de CLASS I devrait être raccordé à une prise murale d'alimentation avec connexion intacte de mise à la masse. Lorsqu'une prise de branchement ou un coupleur d'appareils est utilisée comme dispositif de débranchement, ce dispositif de débranchement devra demeurer pleinement fonctionnel avec raccordement à la masse.

### Risque

Ne pas placer cet appareil sur un chariot, un support, un trépied ou une table instables. L'appareil pourrait tomber et blesser quelqu'un ou subir des dommages importants. Utiliser seulement un chariot, un support, un trépied ou une table recommandés par le fabricant ou vendus avec le produit. Suivre les instructions du fabricant pour installer l'appareil et utiliser les accessoires recommandés par le fabricant. Utilisez seulement les attaches/accessoires indiqués par le fabricant

Note: L'utilisation prolongée des écouteurs à un volume élevé peut avoir des conséquences néfastes sur la santé sur vos oreilles. .

Il convient de ne pas placer sur l'appareil de sources de flammes nues, telles que des bougies allumées.

L'appareil ne doit pas être exposé à des égouttements d'eau ou des éclaboussures et qu'aucun objet rempli de liquide tel que des vases ne doit être placé sur l'appareil.

Assurez que l'appareil est fourni de la propre ventilation. Ne procédez pas à l'installation près de source de chaleur tels que radiateurs, registre de chaleur, fours ou autres appareils (incluant les amplificateurs) qui produisent de la chaleur.

Les dispositifs marqués d'une symbole "d'éclair" sont des parties dangereuses au toucher et que les câblages extérieurs connectés à ces dispositifs de connection extérieure doivent être effectivés par un opérateur formé ou en utilisant des cordons déjà préparés.

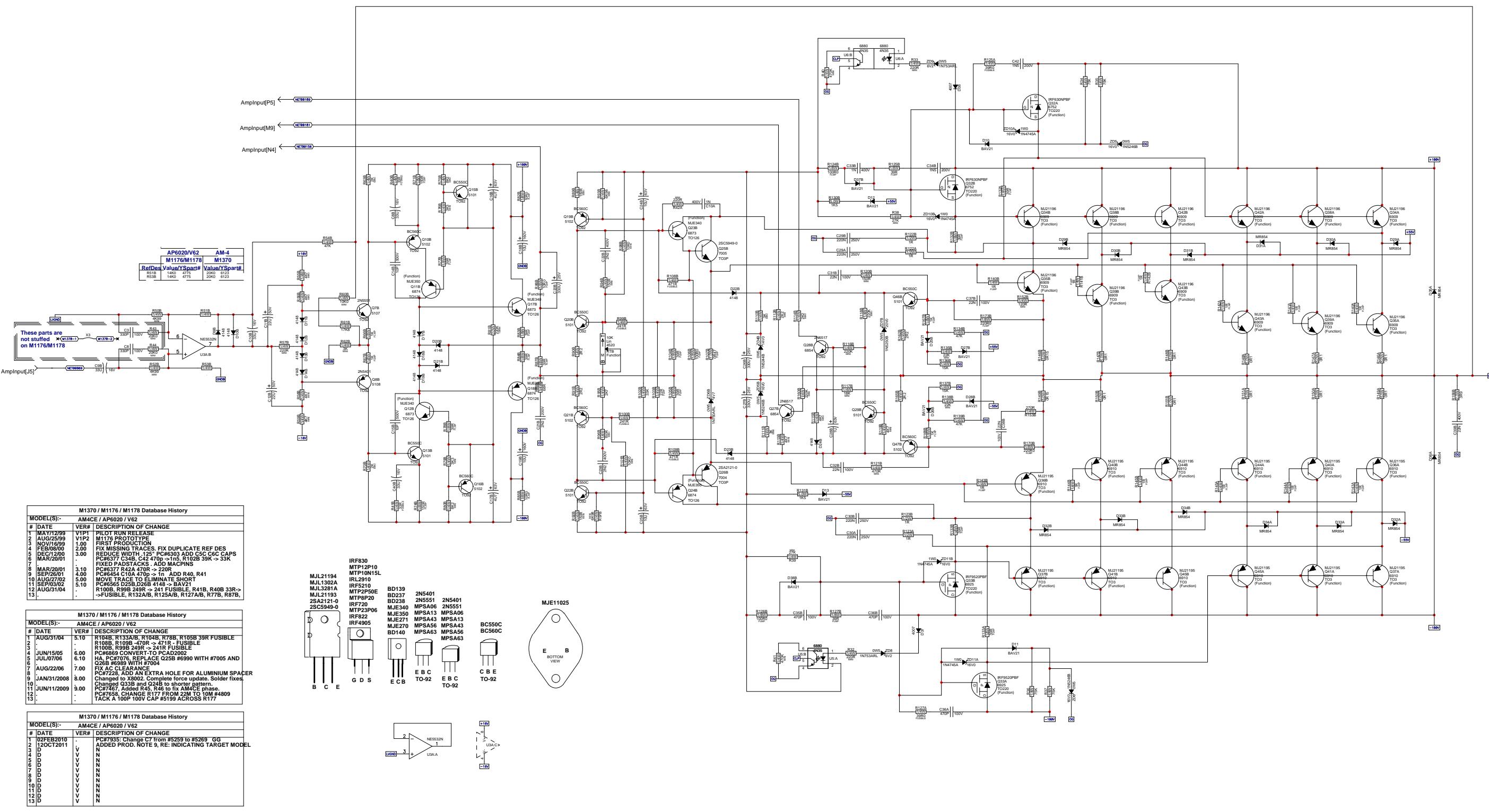
### Cordon d'Alimentation

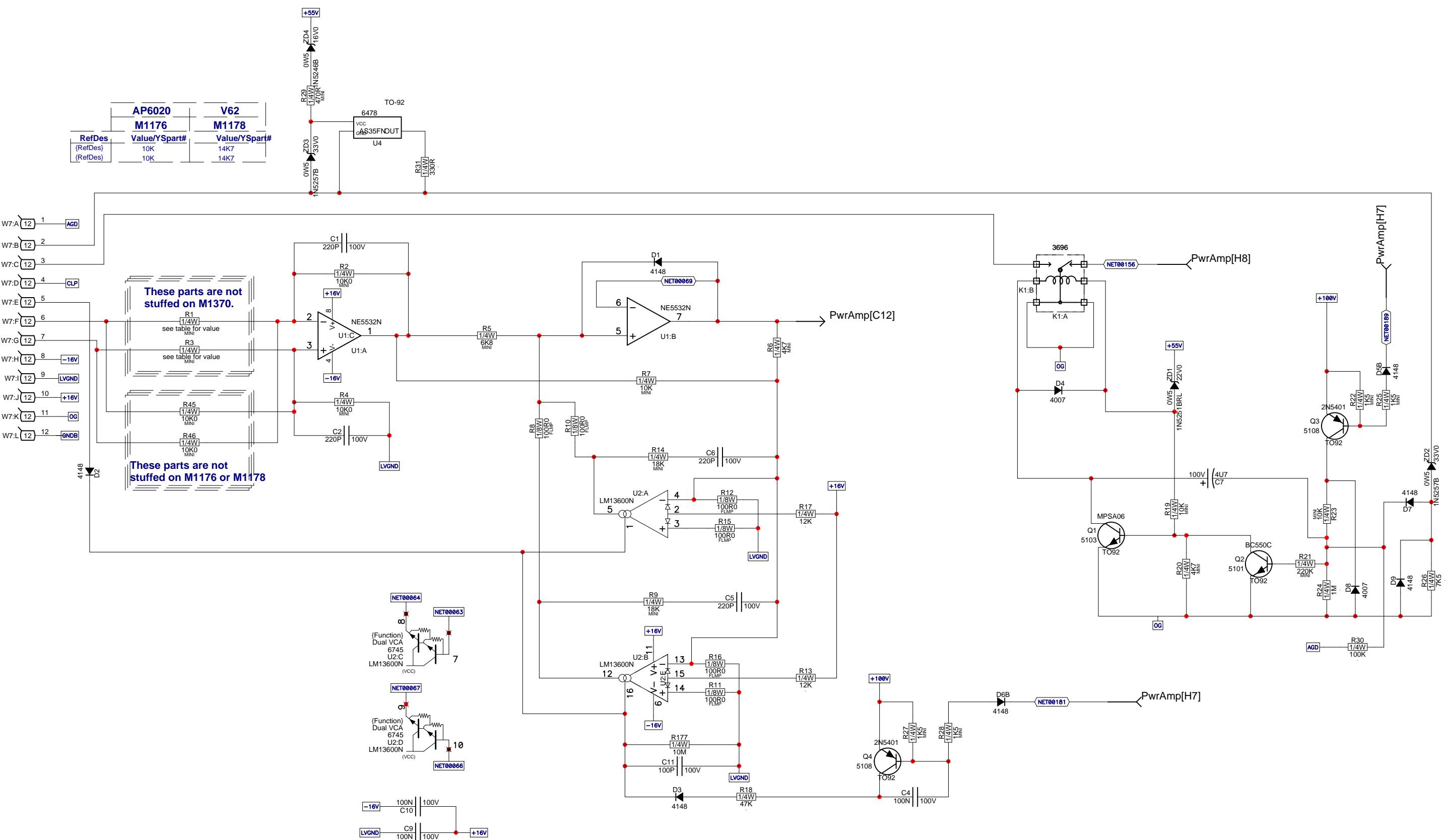
Ne pas enlever le dispositif de sécurité sur la prise polarisée ou la prise avec tige de mise à la masse du cordon d'alimentation. Une prise polarisée dispose de deux lames dont une plus large que l'autre. Une prise avec tige de mise à la masse dispose de deux lames en plus d'une troisième tige qui connecte à la masse. La lame plus large ou la tige de mise à la masse est prévu pour votre sécurité. La prise murale est désuete si elle n'est pas conçue pour accepter ce type de prise avec dispositif de sécurité. Dans ce cas, contactez un électricien pour faire remplacer la prise murale. Évitez d'endommager le cordon d'alimentation. Protégez le cordon d'alimentation. Assurez-vous qu'on ne marche pas dessus et qu'on ne le pince pas en particulier aux prises. **N'UTILISEZ PAS L'APPAREIL** si le cordon d'alimentation est endommagé. Pour débrancher complètement cet appareil de l'alimentation CA principale, déconnectez le cordon d'alimentation de la prise d'alimentation murale. Le cordon d'alimentation du bloc d'alimentation de l'appareil doit demeurer pleinement fonctionnel.

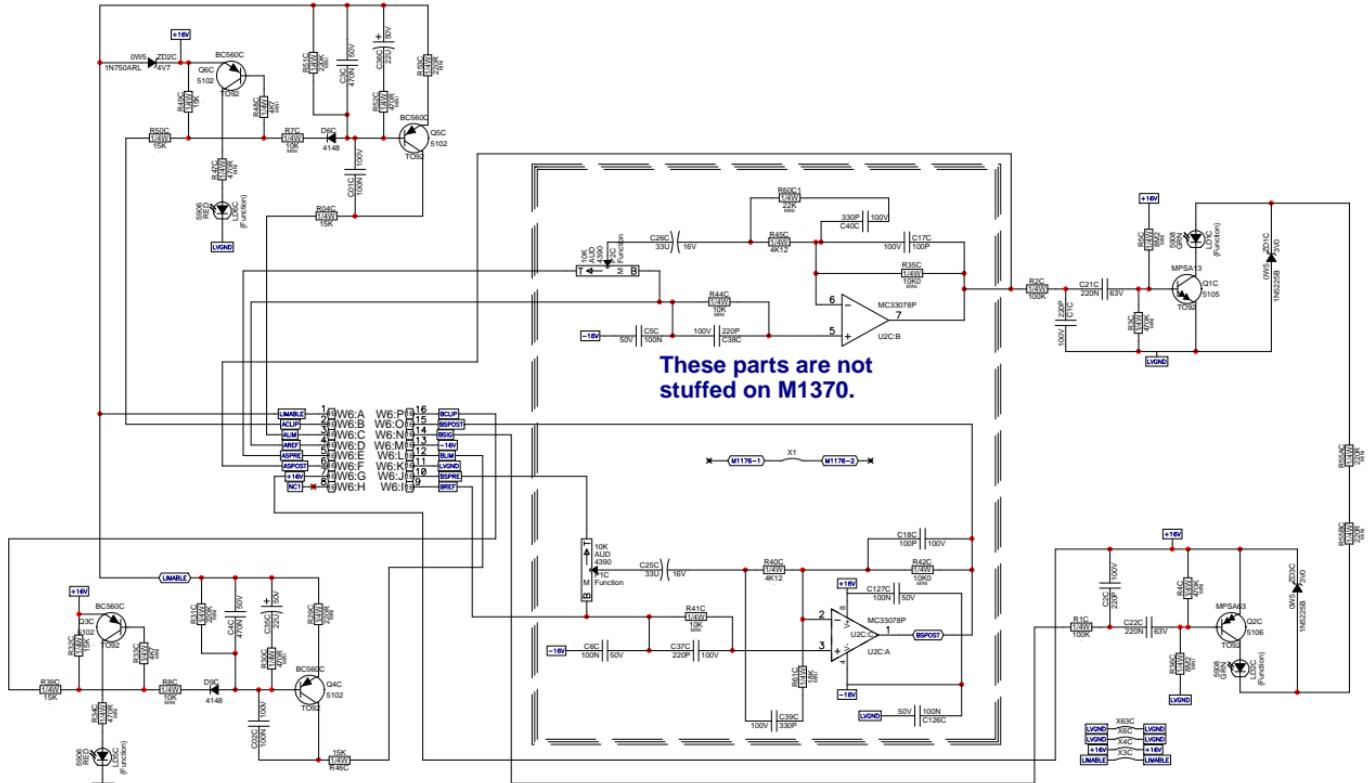
Débranchez cet appareil durant les orages ou si inutilisé pendant de longues périodes.

### Service

Consultez un technicien qualifié pour l'entretien de votre appareil. L'entretien est nécessaire quand l'appareil a été endommagé de quelque façon que se soit. Par exemple si le cordon d'alimentation ou la prise du cordon sont endommagés, si il y a eu du liquide qui a été renversé à l'intérieur ou des objets sont tombés dans l'appareil, si l'appareil a été exposé à la pluie ou à l'humidité, si il ne fonctionne pas normalement, ou a été échappé.











BlankSize - 18000x13000

Pcb Mech X8002 V9.00

Bottom X8002

AP6020 M1176A

V9.00

SEE LAYOUT DOCUMENTATION

CLINCH  
ORIGIN

ETCH  
GUIDE

INSERT  
ORIGIN  
LONG AXIS

Top Assy X8002 V9.00

USE 2 OZ COPPER

ETCH  
GUIDE

Q34B

Q42B

Q38A

Q42A

Q38B

Q39A

Q35B

Q39B

Q43A

Q43B

Q44A

Q44B

Q45A

Q45B

Q41A

Q41B

Q37B

Q37A

Q36A

Q36B

Q40A

Q40B

Q42A

Q42B

Q38A

Q38B

Q39B

Q35B

Q39A

Q43B

Q44B

Q45B

Q41B

Q37B

Q36B

Q40A

Q42A

Q38B

Q39B

Q43B

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Q43B



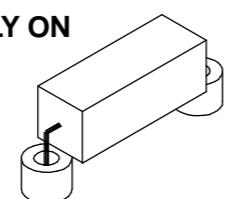
# SEE LAYOUT DIAGRAM



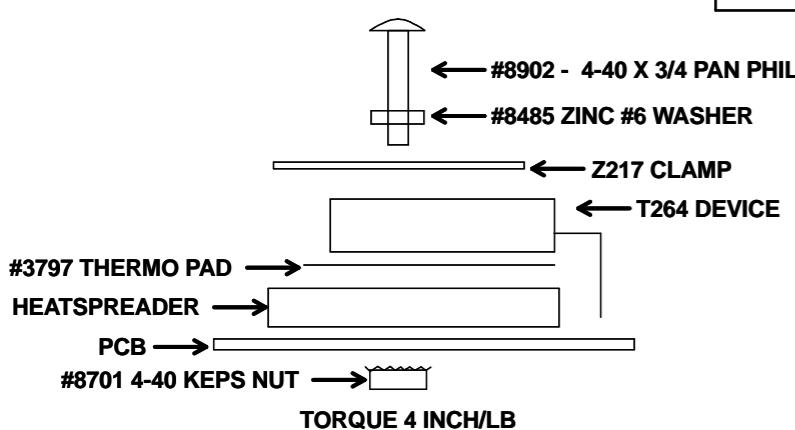
## PRODUCTION NOTES

### M1370/M1370A/M1176/M1176A/ M1178/M1178A

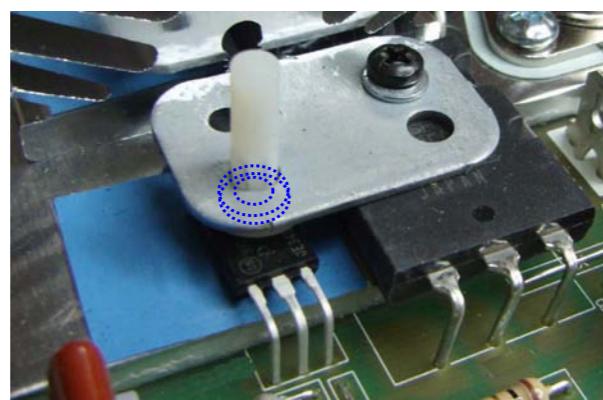
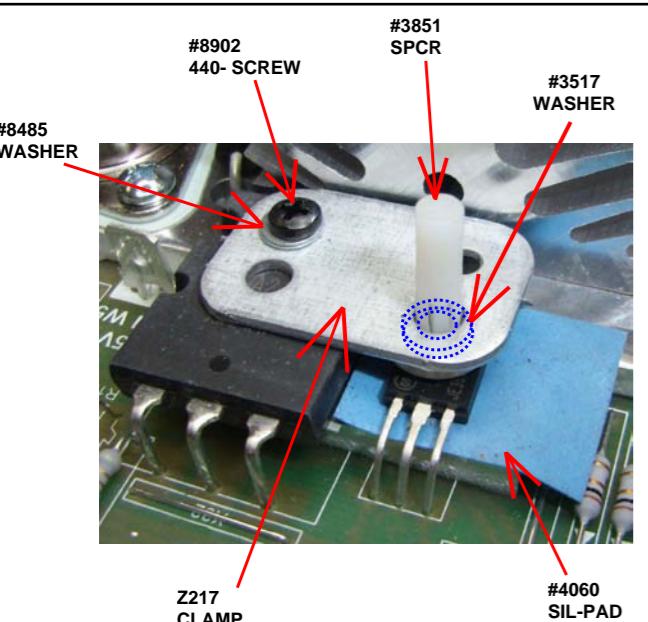
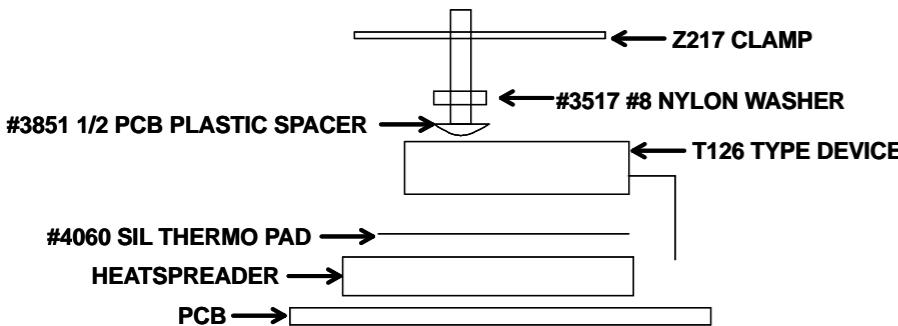
1. MOUNTING DETAILS FOR 5W ADD #8629 SPACERS ONLY ON 5 WATT RESISTORS R130A, R130B AND R131B.



2. MOUNTING HARDWARE FOR Q25B AND Q26B.

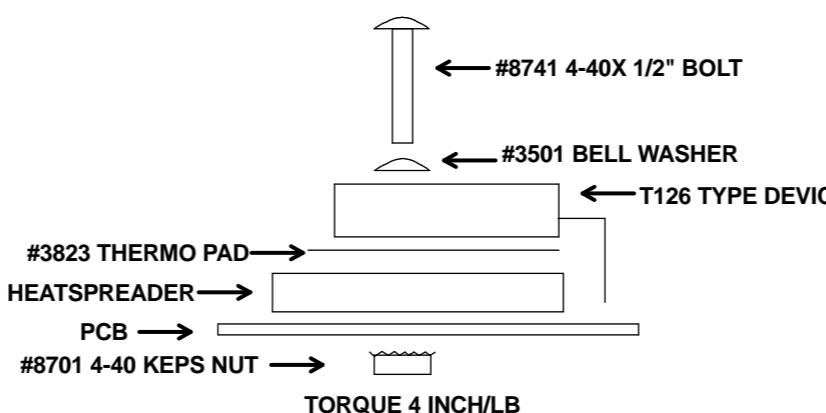


3. MOUNTING HARDWARE FOR Q23B AND Q24B.

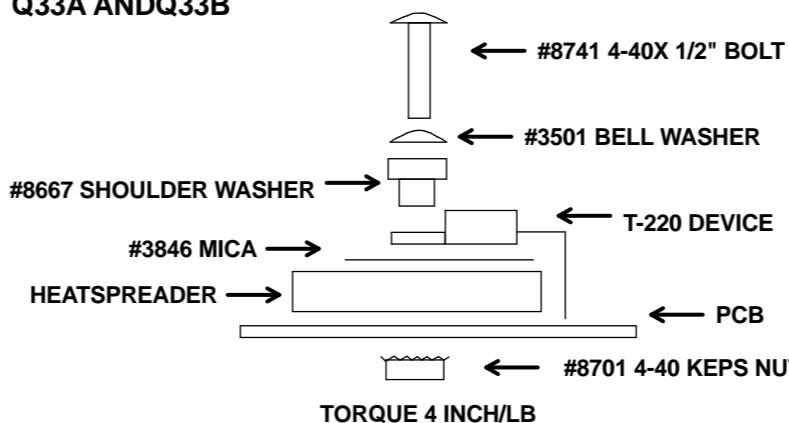


CLAMP DETAIL - SEE NOTES 2 AND 3.

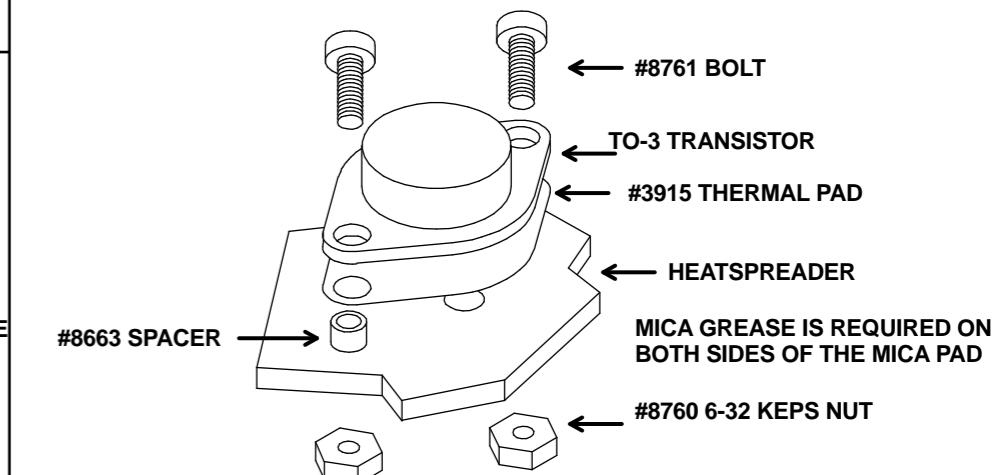
4. MOUNTING HARDWARE FOR Q17B AND Q18B.



5. MOUNTING HARDWARE FOR Q32A, Q32B Q33A AND Q33B



6. MOUNTING HARDWARE FOR TO3 OUTPUTS



7. NOTE THAT R146B AND R149B ARE 0R15.

8. TAB WIRE COLOURS

TB2	RED	14AWG	+145V
TB3	GRY	14AWG	+55V
TB5	BRN	14AWG	-55V
TB6	BLU	14AWG	-145V
TB4	OUTPUT +		
TB7	OUTPUT -		

9. INDICATING THE TARGET MODEL

INVALID PRODUCT MODELS MUST BE CROSSED OUT IN THE PCB TITLE BOX. FOR EXAMPLE, IF THE PCB IS STUFFED FOR THE AP6020, THEN MODELS 'AM4CE' AND 'V62' MUST BE CROSSED OUT WITH A BLACK MARKER.

FOR AP6020 (M1176A):

X8002
AP6020 / <del>AM4CE / V62</del>
V9.00

FOR AM4CE (M1370A):

X8002
AP6020 / <del>AM4CE / V62</del>
V9.00

FOR V62 (M1178A):

X8002
AP6020 / <del>AM4CE / V62</del>
V9.00



## SEE LAYOUT DIAGRAM



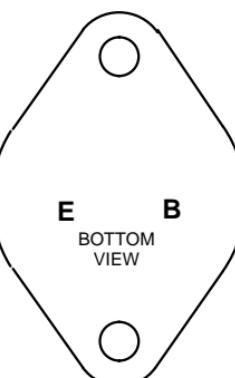
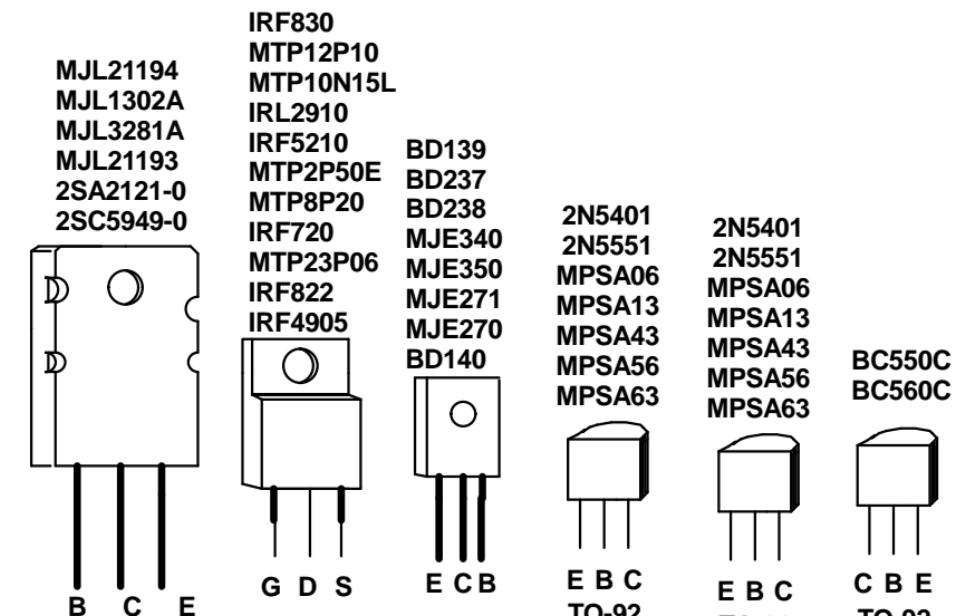
## PIN CONFIGURATION

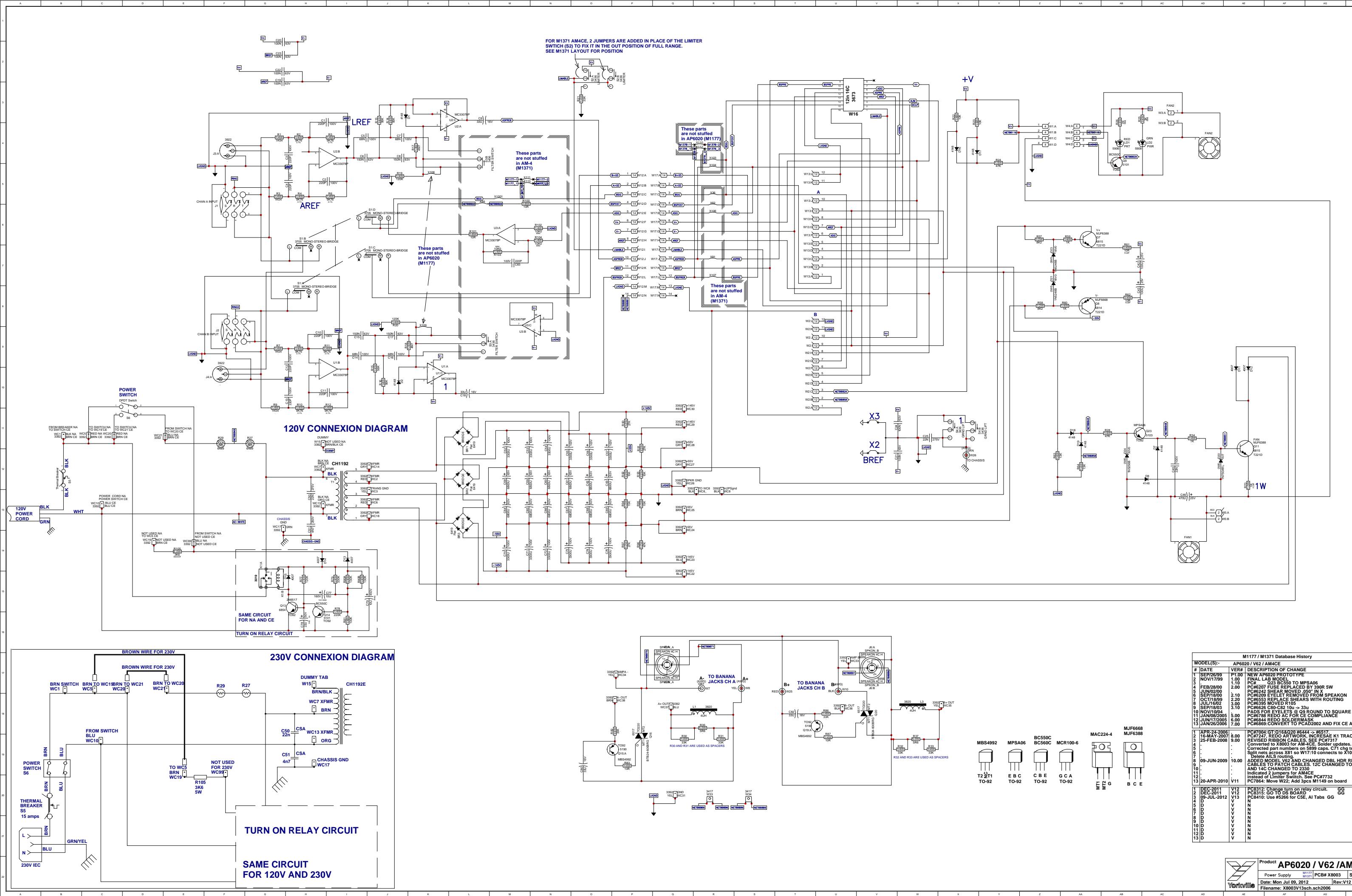
M1370 / M1176 / M1178 Database History			
MODEL(S):- AM4CE / AP6020 / V62			
#	DATE	VER#	DESCRIPTION OF CHANGE
1	MAY/12/99	V1P1	PILOT RUN RELEASE
2	AUG/25/99	V1P2	M1176 PROTOTYPE
3	NOV/16/99	1.00	FIRST PRODUCTION
4	FEB/08/00	2.00	FIX MISSING TRACES. FIX DUPLICATE REF DES
5	DEC/12/00	3.00	REDUCE WIDTH .125" PC#6303 ADD C5C C6C CAPS
6	MAR/20/01	.	PC#6377 C34B, C42 470p ->1n5, R102B 39K -> 33K
7	.	.	FIXED PADSTACKS . ADD MACPINS
8	MAR/20/01	3.10	PC#6377 R42A 470R -> 220R
9	SEP/26/01	4.00	PC#6454 C10A 470p -> 1n ADD R40, R41
10	AUG/27/02	5.00	MOVE TRACE TO ELIMINATE SHORT
11	SEP/03/02	5.10	PC#6565 D25B,D26B 4148 -> BAV21
12	AUG/31/04	.	R100B, R99B 249R -> 241 FUSIBLE, R41B, R40B 33R-> R104B, R132A/B, R125A/B, R127A/B, R77B, R87B,
13	.	.	->FUSIBLE, R132A/B, R125A/B, R127A/B, R77B, R87B,

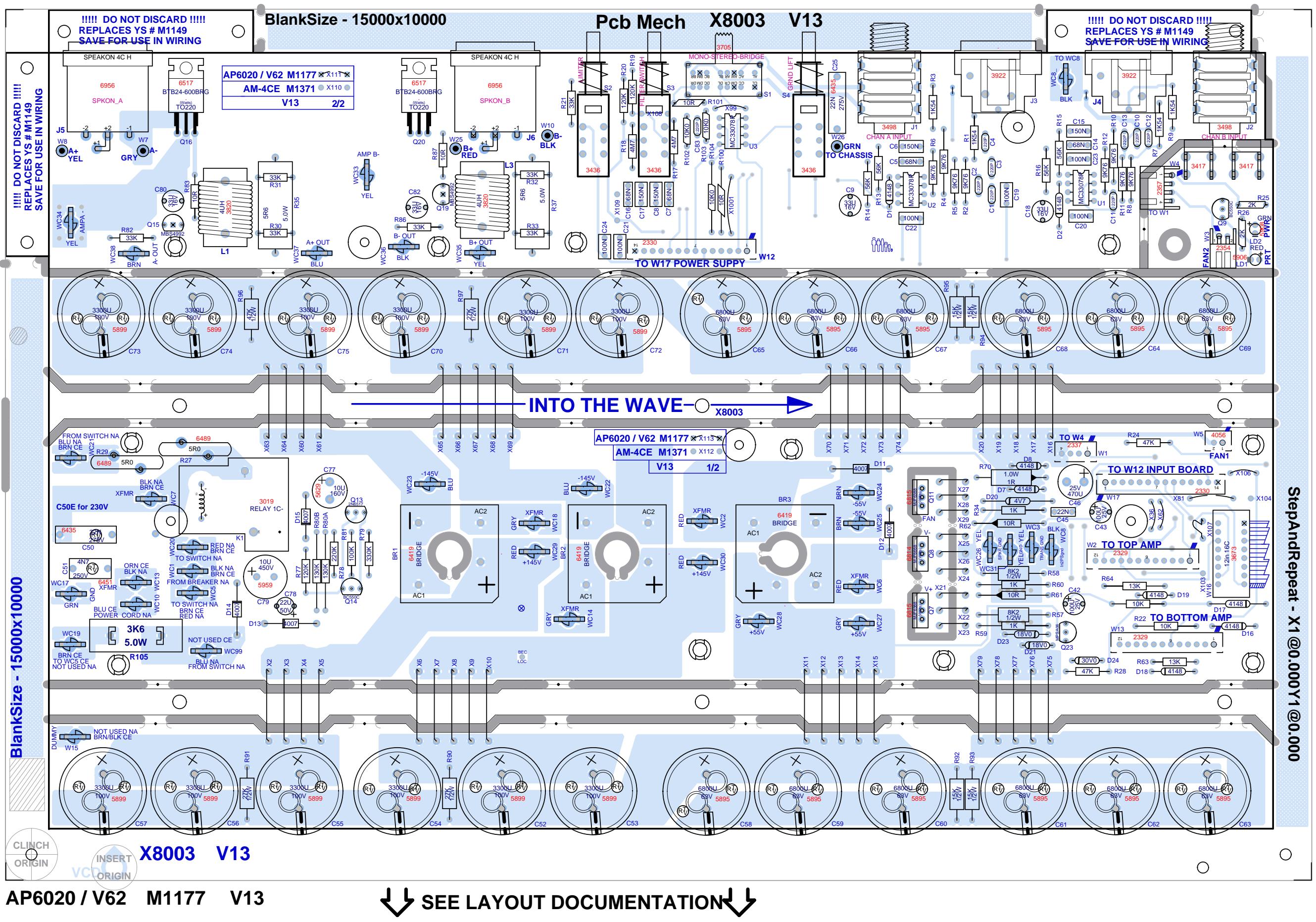
  

M1370 / M1176 / M1178 Database History			
MODEL(S):- AM4CE / AP6020 / V62			
#	DATE	VER#	DESCRIPTION OF CHANGE
1	AUG/31/04	5.10	R104B, R133A/B, R104B, R78B, R105B 39R FUSIBLE
2	.	.	R108B, R109B -470R -> 471R - FUSIBLE
3	JUN/15/05	6.00	R100B, R99B 249R -> 241R FUSIBLE
4	JUL/07/06	6.10	PC#6869 CONVERT-TO PCAD2002
5	HA, PC#7076, REPLACE Q25B #6990 WITH #7005 AND Q26B #6989 WITH #7004	.	
6	AUG/22/06	7.00	FIX AC CLEARANCE
7	JAN/31/2008	8.00	PC#7228, ADD AN EXTRA HOLE FOR ALUMINUM SPACER
8	Changed to X8002. Complete force update. Solder fixes.	.	
9	Changed Q33B and Q24B to shorter pattern.	.	
10	JUN/11/2009	9.00	PC#7467, Added R45, R46 to fix AM4CE phase.
11	PC#7658, CHANGE R177 FROM 22M TO 10M #4809	.	
12	.	.	TACK A 100P 100V CAP #5199 ACROSS R177
13	.	.	

M1370 / M1176 / M1178 Database History			
MODEL(S):- AM4CE / AP6020 / V62			
#	DATE	VER#	DESCRIPTION OF CHANGE
1	02FEB2010	.	PC#7935: Change C7 from #5259 to #5269 GG
2	12OCT2011	V	ADDED NOTE 9, RE: INDICATING TARGET MODEL
3	D	N	
4	D	N	
5	D	N	
6	D	N	
7	D	N	
8	D	N	
9	D	N	
10	D	N	
11	D	N	
12	D	N	
13	D	V	









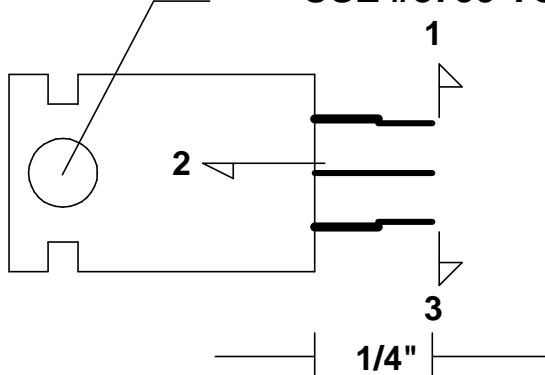
SEE LAYOUT DIAGRAM



## PRODUCTION NOTES M1177 AP6020

### 1. MOUNTING DETAILS FOR Q30 TRIAC

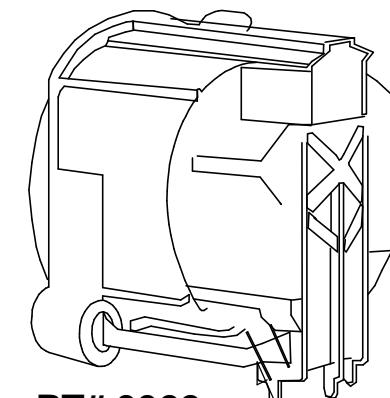
USE #8799 TO MOUNT TRIAC Q30



BEND DOWN 1/4" FROM BODY  
OF TRANSISTOR

#### IMPORTANT!

AFTER MOUNTING DEVICE  
DO NOT CUT LEGS #2 OR #3  
BEND LEGS IN DIRECTION SHOWN  
IT IS IMPERATIVE THAT LEGS  
MARKED 2 AND 3 ARE BENT FLAT  
AGAINST THE COPPER SURFACE



PT# 3922  
THIS CONNECTION  
MUST BE BROKEN HERE

2. CUT LARGE CAP LEADS BEFORE WAVE SOLDER.
3. SCREW DOWN BRIDGES WITH #8753 SCREW.
4. REMOVE GROUND TAB ON XLR JACKS.
6. BEFORE WAVE SOLDER, CHECK FOR MISSING TABS  
HIGHLIGHTED BY THICKER LEGEND SILKSCREEN.
8. FOR EACH AMPLIFIER ONLY 2PCS OF M1149 SUB-BOARDS ARE NEEDED.  
THE THIRD ONE IS A SPARE ONE.

# SEE LAYOUT DIAGRAM

M1177 / M1371 Database History			
MODEL(S):- AP6020 / AM4CE			
#	DATE	VER#	DESCRIPTION OF CHANGE
1	SEP/26/99	P1.00	NEW AP6020 PROTOTYPE
2	NOV/17/99	1.00	FINAL LAB MODEL
3		1.10	PC# Q23 BC550 TO MPSA06
4	FEB/28/00	2.00	PC#6207 FUSE REPLACED BY 390R 5W
5	JUN/02/00		PC#6242 SHEAR MOVED .050" IN X
6	SEP/18/00	2.10	PC#6209 EYELET REMOVED FROM SPEAKON
7	OCT/18/99	2.20	PC#6553 REPLACE SHEARS WITH ROUTING
8	JUL/16/02	3.00	PC#6395 MOVED R105
9	SEP/18/03	3.10	PC#6626 C80-C82 10u -> 33u
10	NOV/10/04		PADS FOR EYELETS @ Q9 ROUND TO SQUARE
11	JAN/08/2005	5.00	PC#6788 REDO AC FOR CE COMPLIANCE
12	JUN/17/2005	6.00	PC#6844 REDO SOLDERMASK
13	JAN/26/2006	7.00	PC#6869: CONVERT TO PCAD2002 AND FIX CE AGAIN
14	APR-24-2006		PC#7004:GT:Q16&Q20 #6444 -> #6517.
15	16-MAY-2007	8.00	PC#7247, REDO ARTWORK, INCREASE K1 TRACES THICK
16	25-FEB-2008	9.00	REVISED RIBBON CABLES, SEE PC#7317
17	.	.	Converted to X8003 for AM-4CE. Solder updates.
18	.	.	Corrected part numbers on 5899 caps. C71 chg to 5899.
19	.	.	Split nets across X81 so W17:10 connects to X104.
20	09-JUN-2009	10.00	Delete AILS routing.
21	.	.	ADDED MODEL V62 AND CHANGED DBL HDR RIBBON
22	.	.	CABLES TO PATCH CABLES. 12C CHANGED TO 2329
23	29-JUN-2009		AND 14C CHANGED TO 2330
24	.	.	Indicated 2 jumpers for AM4CE
25	20-APR-2010	V11	instead of Limiter Switch. See PC#7732
			PC7864: Move W22; Add 3pcs M1149 on board
			GG
1	DEC-2011	V12	PC8312: Change turn on relay circuit. GG
2	DEC-2011	V12	PC8315: GO TO DS BOARD GG
3	09-JUL-2012	V13	PC8410: Use #5266 for C5E, AI Tabs GG
4	D	V	N
5	D	V	N
6	D	V	N
7	D	V	N
8	D	V	N
9	D	V	N
10	D	V	N
11	D	V	N
12	D	V	N
13	D	V	N

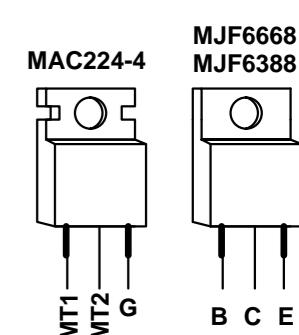
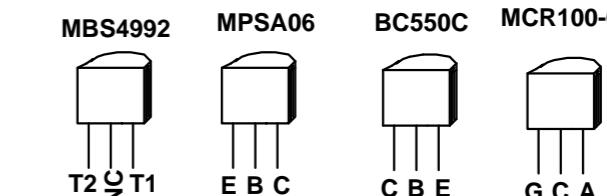
M1177 / M1371 DRILL HISTORY			
MODEL(S):- AP6020 / AM4CE			
#	DATE	VER#	DESCRIPTION OF CHANGE
1	JAN/26/2006	17	REVISED PER PC#6869
2	OCT/16/2007	P0	REVISED PER PC#7317
3	D	V	N
4	D	V	N
5	D	V	N
6	D	V	N

M ____ PENDING CHANGES		
MODEL(S):- {MODEL}		
#	PC#	PENDING CHANGE
1	PC	X
2	PC	X
3	PC	X
4	PC	X
5	PC	X
6	PC	X

\*PLACE IMPLEMENTED CHANGES INTO BOARD HISTORY

## PIN CONFIGURATION





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## **SERVICE BULLETIN**

**Date** : February 29, 2000  
**Re** : AP6020 / AP6040 Internal Fuse Problem

Dear Staff & Dealers,

*We are sorry to advise that a service issue has developed with the AP6020 and AP6040 power amplifiers that will eventually affect every unit shipped before February 26th, 2000. All units in stock in Canada and the USA have been reworked to correct this problem.*

*The problem is serious enough that it is necessary to modify all units in the field, so we are here by issuing a service bulletin that will be followed up with letters and phone calls to all affected dealers and distributors.*

*All units should be modified as soon as possible. The units can either be returned to Yorkville for modification, or can easily be modified in the field by a qualified service technician. We will, of course, accept warranty claims for this modification.*

### *Required Modification:*

---

- Remove the lid from the unit and both power amp boards.
- Locate the small 0.1A fuse on lower power supply board (#M1151 - AP6040 or M1177 - AP6020). This is the only fuse in the unit.
- Replace this fuse with a 5W 390R resistor (YSL Part#4736).
- Dress all wires away from the two 5W 390R resistors.
- In order to be sure that no damage was done to the upper power amp boards when they were removed it is strongly advised that the technician carefully retouch the solder on the three legs of each of the following transistors: #Q32A, Q32B, Q33A and Q33B on each of the two power amp boards (AP6040 - M1176/M1176A, AP6020 - M1150/M1150A)
- Replace the upper boards and lid.

*Sorry for any inconvenience caused as a result of this problem. For further technical information or assistance please contact Peter Mourtos at Yorkville Sound via phone at (905)837-8550 Ext.218 or via email at [pmourtos@yorkville.com](mailto:pmourtos@yorkville.com) .*

**Enclosed** - Layouts for AP6020/AP6040 Power Supply and Power Amplifier boards.

ADD #8629 SPACERS ONLY ON  
5 WATT RESISTORS  
R29, R29A R45 AND R45A

MOUNTING HARDWARE FOR Q5, Q6

#8871 4-40X 1/2" BOLT  
#3501 BELL WASHER  
T264 DEVICE  
HEATSPREADER  
PCB  
#8701 4-40 KEPS NUT  
TORQUE 4 INCH/LB

MOUNTING HARDWARE FOR Q40, Q41

#8741 4-40X 1/2" BOLT  
#3501 BELL WASHER  
T126 TYPE DEVICE  
#3797 THERMO PAD  
HEATSPREADER  
PCB  
#8701 4-40 KEPS NUT  
TORQUE 4 INCH/LB

MOUNTING HARDWARE FOR Q11, Q12

#8741 4-40X 1/2" BOLT  
#3501 BELL WASHER  
#8667 SHOULDER WASHER  
T-220 DEVICE  
#3846 MICA  
HEATSPREADER  
PCB  
#8701 4-40 KEPS NUT  
TORQUE 4 INCH/LB

MOUNTING HARDWARE FOR TO3 OUTPUTS

#8835 BOLT  
TO-3 TRANSISTOR  
#3815 MICA  
HEATSPREADER  
#8663 SPACER  
MICA GREASE IS REQUIRED ON  
BOTH SIDES OF THE MICA PAD  
#8800 6-32 KEPS NUT

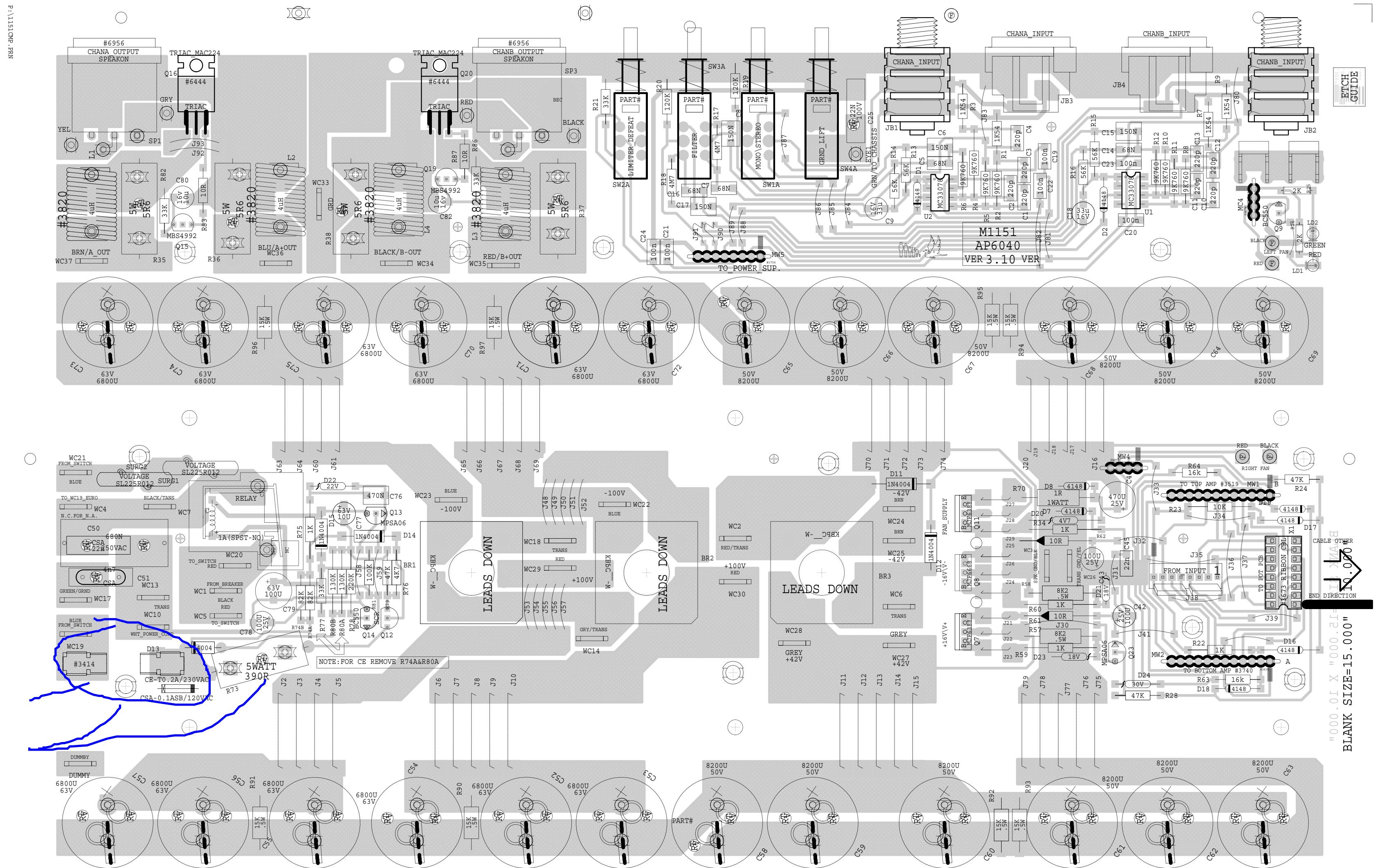
INITIAL TORQUE FOR TO-3'S IS 8 INCH/LB  
FINAL TORQUE AFTER HEATSINK HAS  
COOLED FROM WAVE SOLDER IS 6 INCH/LB

TAB WIRE COLOURS

TAB 2 RED 14AWG  
TAB 3 YEL 14AWG  
TAB 5 BRN 14AWG  
TAB 6 BLU 14AWG  
TAB 4 OUTPUT +  
TAB 7 OUTPUT -

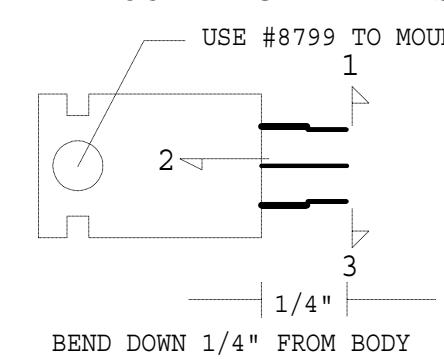
USE 2 OZ. COPPER

ETCH  
GUIDE

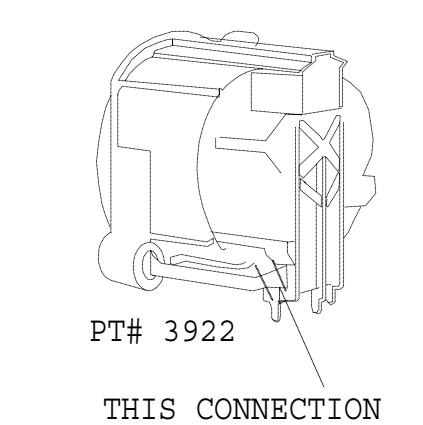


M1151.PCB DATABASE HISTORY			
MODEL(S) :-	AP6040	# DATE	VER#
1	AUG/10/99	2.00	PC#6034 LD2 ROTATED TRIACS Q18, Q22 DELETED. R85, Q17, C81
2	.	.	R84, R88, Q21, C83, R89 DELETED
3	.	.	TRACES ENLARGED
4	SEP/28/99	3.00	PC#6125 CHANGE SPACING R73 PC#6128
5	OCT/18/99	.	CHANGE SPACING OF COILS
6	.	.	REPLACE 16 PIN IC-SOCKET WITH #3673
7	JAN/31/00	3.10	RIBBON CABLE PC# - Q23 - BC550 -> MPSA06 (TO MATCH SCHEMATIC)
8	.	.	
9	.	.	
10	.	.	
11	5	N	
12	V	V	
13	V	V	
14	V	V	
15	V	V	
16	V	V	
17	V	V	
18	V	V	
19	D	V	
20	V	V	
21	V	V	
22	V	V	
23	D	V	

### 1 MOUNTING DETAILS FOR Q30 TRIAC

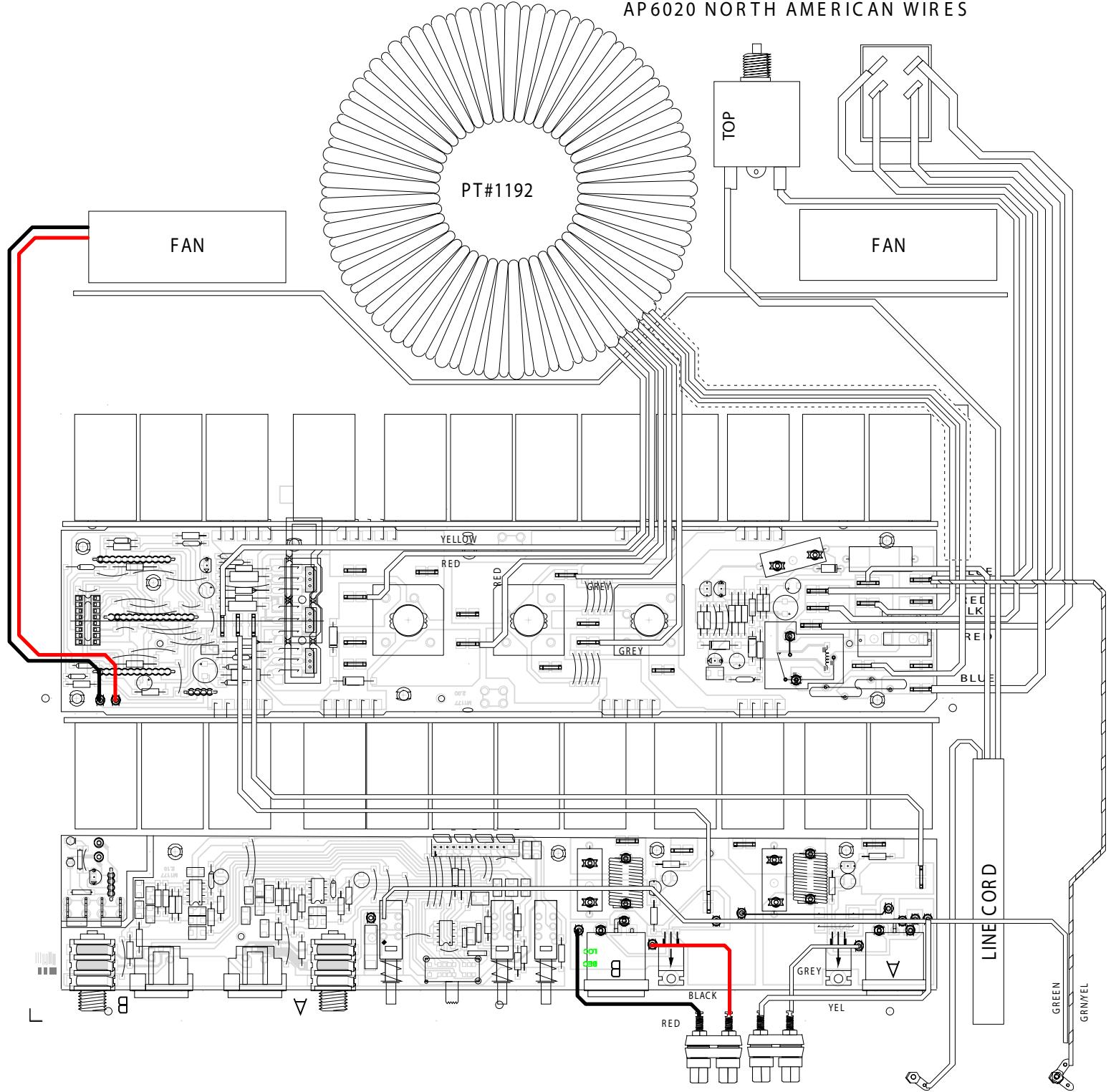


IMPORTANT  
AFTER MOUNTING DEVICE  
DO NOT CUT LEGS #2 OR #3  
BEND LEGS IN DIRECTION SHOWN  
IT IS IMPERATIVE THAT LEGS  
MARKED 2 AND 3 ARE BENT FLAT  
AGAINST THE COPPER SURFACE



2 CUT LARGE CAP LEADS BEFORE WAVE SOLDER.

3 SCREW DOWN BRIDGES WITH #8753 SCREW.



YS #	Description	Qty.	YS #	Description	Qty.	YS #	Description	Qty.
6478	AS335FN-T092 TEMPERATURE SENSOR	2	4520	10K TRIM POT	2	4774	1/4W 4K12 1% T&R RES	2
5906	RED 3MM LED 1V 20MA-4SPCER T&R	3	2444	25.00 AMP CIRCUIT BREAKER	1	4982	1/4W 4K7 5%MINI T&R RES	20
5908	GRN 3MM LED 1V 20MA-4SPCER T&R	3	3820	.4UH COIL 14AWG ZOBEL HORIZONTAL	2	6128	1/4W 4K99 1%MINI MF T&R RES	4
6419	BRIDGE 35A 400V WIRE LEAD G13504	3	8521	RUBBER BUMPER WITH WASHER VERYSMALL	2	4978	1/4W 6K8 5%MINI T&R RES	2
6425	BAV21 200V 0A25 DIODE T&R	20	3441	CLIP 250X032 16-16AWG RIGHT ANGLE	34	6121	1/4W 6K8 1%MINI MF T&R RES	4
6825	1N4148 75V 0A45 DIODE T&R	52	3470	CLIP 250X032 14-16AWG DISCO-LOK	8	4887	1/4W 7K5 5% T&R RES	2
6438	1N4007 1000V 1A0 DIODE T&R	13	3485	CLIP 250X032 18-22AWG RIGHT ANGL	1	4663	1/2W 8K2 5% T&R RES	2
6934	MR854 400V 3A0 DIODE FASREC	28	3601	RING TERMINAL 16AWG WIRE # 8 SCREW	2	4990	1/4W 8K2 5%MINI T&R RES	4
6432	1N5248B 18V0 0W5 ZENER 5% T&R	2	3618	STAR RING TERMINAL 16-16AWG #10SCREW	4	4762	1/4W 9K760 0.1% *** T&R RES	8
6436	1N753ARL 6V2 0W5 ZENER 5% T&R	4	3410	RED-LEFT/BLACK-RIGHT BIND POST TPP5	1	4829	1/4W 10K 5% T&R RES	2
6439	1N5225B 3V0 0W5 ZENER 5% T&R	2	3415	RED/RIGHT/BLACK-LEFT BIND POST TPP5	1	4983	1/4W 10K 5%MINI T&R RES	10
6440	1N750ARL 4V7 0W5 ZENER 5% T&R	4	3498	1/4" JCK PCB MT HORZ	2	6116	1/4W 10K0 1%MINI MF T&R RES	19
6463	1N5251BRL 22V0 0W5 ZENER 5% T&R	2	6966	SPKON 4C PCB MT HORZ GRY #4	2	4856	1/4W 12K 5% T&R RES	4
6465	1N5250B 20V0 0W5 ZENER 5% T&R	2	3922	XLR FEMI PCB MT HORZ THIN SNAP-IN	2	4901	1/4W 13K 5% T&R RES	2
6466	1N5256B 30V0 0W5 ZENER 5% T&R	5	3864	FAN 92MM X 92MM 60CFM 24VDC	2	4775	1/4W 14K0 1% T&R RES	4
6486	1N5244B 14V0 0W5 ZENER 5% T&R	2	3501	BS2200F006 COMP WASH #4 SMALL	20	4630	1/2W 15K 5% T&R RES	4
6824	1N5246B 16V0 0W5 ZENER 5% T&R	8	3518	CLEAR PVC TUBING .500" DIA. 105°C	0.333	4830	1/4W 15K 5% T&R RES	10
6822	1N4745A 16V0 1W0 ZENER 5% T&R	8	3799	ROUND BUMPER BUTTON BLACK	1	4771	1/4W 17K8 1% T&R RES	2
5101	BC5500C TO92 NPN TRAN T&R TB	16	3801	5/8" BUMPER BUTTON BLACK	4	6125	1/4W 18K 5%MINI T&R RES	7
5102	BC560C TO92 PNP TRAN T&R TB	14	3810	4" NYLON CABLE TIE	17.4	6118	1/4W 22K 5%MINI T&R RES	5
5103	MPSA06 TO92 NPN TRAN T&R TA	4	3827	SQUARE BUMPER BUTTON BLACK	5	4633	1/2W 27K 5% T&R RES	3
5107	2N5551 TO92 NPN TRAN T&R TA	2	8433	KNOB AP SERIES PLASTIC	2	6129	1/4W 27K 5%MINI T&R RES	4
5108	2N5401 TO92 PNP TRAN T&R TA	6	8661	KNOB BUTTON FLAT GREY	3	4840	1/4W 33K 5% T&R RES	9
6854	2N6517 TO92 NPN TRAN TA	5	8437	FAN FILTER LABEL	1	4634	1/2W 47K 5% T&R RES	1
5105	MPSA13 TO92 NPN DARL T&R TA	1	8261	GE VELVET/MATTE LEXAN .007"X12"X24"	0.25	4834	1/4W 47K 5% T&R RES	10
5106	MPSA63 TO92 PNP DARL T&R TA	1	8701	4-40 KEPS NUT ZINC	21	4835	1/4W 56K 5% T&R RES	4
6814	MJF6668 T221D PNP TRAN DARL TJ	1	8666	6-32 X 1/4" PEM THRD SPACER 0.213	4	4760	1/4W 75K 5% T&R RES	8
6815	MJF6388 T221D NPN TRAN DARL TJ	2	8760	6-32 KEPS NUT TIN PLATED	96	4838	1/4W 100K 5% T&R RES	5
6873	MJE340 TO126 NPN TRAN TG	6	8800	6-32 KEPS NUT ZINC	10	4851	1/4W 120K 5% T&R RES	3
6874	MJE350 TO126 PNP TRAN TG	6	8844	6-32 PEENUT	6	4894	1/4W 130K 5% T&R RES	2
6752	MTP10N15L TO202 NCH MFET TN	4	8841	10-32 KEPS NUT TIN PLATED	3	4668	2.0W 220K 5%10MM BODY T&R RES	2
6925	IRF9520PBF TO220 PCH MFET TN	4	3797	TO-247 THERMO CONDUCTIVE PAD	4	4841	1/4W 220K 5% T&R RES	1
6909	MJU21196 TO3 NPN TRAN TH	24	3823	TO-220 THERMO PAD SMALL HOLE	4	6126	1/4W 220K 5%MINI T&R RES	10
7004	2SA2121-0 TO3P PNP TRAN TK	2	3846	TO220 THERMO PAD LARGE HOLE 56359B	8	4842	1/4W 330K 5% T&R RES	1
7005	2SC5949-0 TO3 NPN TRANSISTOR TK	2	3916	TO3 SIL-PAD REPLACES MICA	48	6127	1/4W 470K 5%MINI T&R RES	6
6910	MJU21195 TO3 PNP TRAN TH	24	4124	SILPAD 1500ST 1.100 X0.820 BERQUIST	4	4844	1/4W 1M 5% T&R RES	2
6840	MC33078P IC DUAL OP AMP	4	8498	6-32 X 3/8 PEEL STUD	6	4888	1/4W 4M7 5% T&R RES	2
6884	NE5532N IC DUAL OP AMP	4	4597	22AWG STRAN TC WIR JMP	47	6132	1/4W 8M2 5%MINI T&R RES	2
6745	LM13600N IC XCONDUCTANCE AMP	2	4599	22AWG SOLID SC WIR T&R JMP	123	4809	1/4W 10M 5% T&R RES	2
5190	MBS4992 TO82 RV5 DIAC T&R	2	5299	24AWG SOLID SC WIR RAD-JMP	23	3673	1/4" 16C-28AWG DIP HDR CABLE .05"	1
6517	BTB24-600 TO220AB 25A TRIAC 600V	2	4745	5.0W 0R1 5% BLK RES	22	3019	RELAY 1C 30AMP DC110 08MA PC-C	1
6880	4N35 OPTO-COUPLED	4	4749	5.0W 0R15 5% BLK RES	4	3696	RELAY 1C 02AMP DC24 006MA PC-S	2
6489	_5R 20% THERM-SURGR NTC KNK LEADS	2	2005	1.0W 0R47 5%FLAME PROOF T&R RES	2	8870	#4 X 1/4 PAN PH TYPE A ZINC	1
5401	_10P 500V 5%CAP T&R RAD CER.2NPO	4	2006	1.0W 1R 5%FLAME PROOF T&R RES	1	8729	#4 X 3/8 FLAT QUAD TYPE A JS500 BLK	8
5199	_10OP 100V 2%CAP T&R RAD CER.2NPO	2	2007	1/4W 1R 5%FLAME PROOF T&R RES	24	8799	#6 X 1/4 PAN PH TYPE B JS500	2
5410	_10P 100V 10%CAP T&R BEAD NPO	2	4677	1/2W 1R 5% T&R RES	8	8753	#10 X 1/2 PAN QUAD TY A JS500 BLACK	3
5197	_22OP 100V 2%CAP T&R RAD CER.2NPO	17	4911	1/4W 2R2 5% T&R RES	8	8861	#4-40 X 3/8 PAN PH MS JS500	3
5412	_22OP 100V 10%CAP T&R BEAD NPO	4	4748	2.0W 3R9 5% T&R	2	8741	#4-40 X 1/2 PAN PH MS JS500	16
5211	_33OP 100V 5%CAP T&R RAD CER.2NPO	2	4733	5.0W 5R6 5% BLK RES	2	8871	#4-40 X 1/2 PAN PH MS JS500	4
5201	_47OP 100V 5%CAP T&R RAD CER.2NPO	6	2009	1/4W 10R 2%FLAME PROOF T&R RES	2	8902	4-40 X 3/4 PAN PH MS B/O & WAX	4
5206	_1N 400V 5%CAP T&R RAD .2FLM	4	2010	1/6W 10R0 2%FLAME PROOF T&R RES	6	8832	6-32 X 1/4 PAN PH TAPTTIE JS500	7
5273	_1N5 200V 5%CAP T&R RAD CER.2NPO	4	4605	1/8W 10R 5% T&R RES	2	8807	6-32 X 5/16 PAN PH MS JS500	2
5208	_2N2 400V 5%CAP T&R RAD .2FLM	4	4875	1/4W 10R 5% T&R RES	2	8801	6-32 X 3/8 PAN PH TAPTTIE JS500	4
5274	_2N2 200V 5%CAP T&R RAD CER.2NPO	2	2039	1/4W 22R0 FUSIBLE T&R RES	2	8829	6-32 X 3/8 FLAT PH TAPTTIE BO/C HEA	40
6451	_4N7 250V 20%CAP BLK 'Y' 10MM AC	1	2040	1/4W 33R FUSIBLE T&R RES	4	8761	6-32 X 1/2 PAN PH MS ZINC CLEAR	96
5210	_22N 100V 10%CAP T&R RAD .2FLM	9	2016	1/6W 39R 2%FLAME PROOF T&R RES	26	8999	8-32 X 5/8 PAN PH TAPTTIE JS500	20
5840	_22N 400V 10%CAP BLK RAD POLY FLM	2	2041	1/4W 39R0 FUSIBLE T&R RES	4	8809	10-32 X 1/4 PAN PH TAPTTIE JS500	8
6435	_22N 275V 20%CAP BLK X'Z' 15MM AC	2	4811	1/4W 68R 5% T&R RES	2	8773	10-32 X 1/4 PAN PH TAPTTIE JS500	3
5226	_68N 100V 5%CAP T&R RAD .2FLM	4	2019	1/8W 10R0 1%FLAME PROOF T&R RES	18	8772	1/4-20 X 1 TRUSS PH MS JS500 BLACK	2
5212	_100N 63V 5%CAP T&R RAD .2FLM	6	4987	1/4W 120R 5%MINI T&R RES	2	3351	16 PIN SCKT CLOSED FRAME DIP ONLY	1
5228	_100N 100V 5%CAP T&R RAD .2FLM	8	2020	1/6W 150R 2%FLAME PROOF T&R RES	4	8663	11/64 NYLON SPACER (MICRO PLASTIC)	96
5314	_100N 50V 10%CAP T&R BEAD XTR	4	4984	1/4W 150R 5%MINI T&R RES	10	3752	SNAP IN 1/4 SPACER RICHCO	3
5229	_150N 63V 10%CAP T&R RAD .2FLM	4	2023	1/6W 220R 1%FLAME PROOF T&R RES	4	8851	250 SPACER ID.190 OD.31 ALUMINUM	6
5231	_220N 63V 5%CAP T&R RAD .2FLM	2	4977	1/4W 220R 5%MINI T&R RES	12	3744	SNAP IN .375 SPACER RICHCO	4
5882	_220N 250VDC 10%CAP BLK RAD PLY FLM	8	2046	1/4W 240R FUSIBLE T&R RES	4	3743	SNAP ON 0.5" SPACER RICHCO	14
5322	470N 50V 20%CAP T&R BEAD Z5U	2	4867	1/4W 270R 5% T&R RES	2	3851	1/2 PCB PLASTIC SPACER	7
5255	_1U 63V 20%CAP T&R RAD .2EL	2	4855	1/4W 330R 5% T&R RES	2	3417	6-32 SCREW TERMINAL PC MNT SNAP-IN	2
5259	_4U7 63V 20%CAP T&R RAD .2	4	2048	1/4W 470R FUSIBLE T&R RES	4	3865	1/2 PLASTIC HEX SPACER #6	1
5269	_4U7 100V 20%CAP T&R RAD LESR2	2	4980	1/4W 470R 5%MINI T&R RES	8	8667	SHOULDER WASHER SWS-229 LENGTH 1/8	8
5629	_10U 160V 20%CAP BLK 10X13MM EL	5	2033	1/6W 1K 2%FLAME PROOF T&R RES	8	3511	#6 FLAT WASHER NYLON	1
5945	_10U 63V 20%CAP T&R RAD .2EL	4	4823	1/4W 1K 5% T&R RES	3	8485	#6 SPLIT WASHER ZINC	4
5959	_10U 450V 20%CAP BLK EL	1	4718	5.0W 1K5 1% BLK RES	4	8852	#6 INTERNAL TOOTH LOCKWASHER	1
5260	_22U 50V 20%CAP T&R RAD .2EL	7	4988	1/4W 1K5 5%MINI T&R RES	8	8818	3/4 OD X 3/8 ID X .080 THICK WASHER	1
5961	_33U 16V 20%CAP T&R RAD .2IN NP	14	4791	1/4W 1K54 1% T&R RES	4	3517	NYLON WASHER #8 0.062	5
5267	100U 25V 20%CAP T&R RAD .2EL	2	6113	1/4W 2K 5%MINI T&R RES	6	3705	4P3T SLID SW PCMT H	1
5630	330U 25V 20%CAP BLK 10X13MM EL	6	6104	1/4W 2K2 5%MINI T&R RES	4	3436	DPDT PUSH SW PCMT H BREAK B4 MAKE	3
5618	470U 25V 20%CAP BLK 10X15MM EL	1	4864	1/4W 2K7 5% T&R RES	2	3587	DPDT ROKR SW QUIK 250°AC/PWR ON-OFF	1
5899	3300U 100V 20%CAP BLK 25X50MM ELS	12	6124	1/4W 3K 5%MINI T&R RES	6	H1192-1	AP6020 / V62 XFMR	1
5895	6800U 63V 20%CAP BLK 25X50MM	12	6136	1/4W 3K3 5%MINI T&R RES	4			
4390	_10K AUD 16MM DETENT P22	2	5032	5.0W 3K6 5% STANDOFF BLK RES	1			